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Nursing, 200level

Physiology- PHS 212

Question: Discuss the diseases of the renal system.

Renal system disease, any of the diseases or disorders that affect the human urinary system. They include benign and malignant tumours, infections and inflammations, and obstruction by calculi. Bacteria such as *Pseudomonas aeruginosa* can cause infections of the urethra and bladder. These infections occur more often in women than in men and are typically associated with significant pain and distress. Renal disease in its diverse forms can lead to bodily deficits or excesses of water, sodium, potassium, and magnesium, and also to protein deficits occasioned by great losses of protein in the urine. Inability of the kidney to function normally may lead to retention in the blood of the waste products of protein metabolism, such as urea and uric acid, and of other nitrogenous compounds such as creatinine. There may be abnormally high levels of phosphates in the blood, which in turn can lead to low blood levels of calcium. The calcium deficiency can cause tetany, a condition marked by muscular spasms and pain, and calcium may be lost from the bones in the process of restoring normal calcium levels in the blood and tissue fluid.

Acute renal failure

Acute renal failure occurs when renal function suddenly declines to very low levels, so that little or no urine is formed, and the substances, including even water, that the kidney normally eliminates are retained in the body.

There are two main mechanisms that can produce acute renal failure. When the cardiac output—the amount of blood pumped into the general circulation by the heart—is lowered by hemorrhage or by medical or surgical shock, the renal circulation is depressed to an even greater extent. This leads directly to inefficient excretion, but, more importantly still, the kidney tissue cannot withstand prolonged impairment of its blood supply and undergoes either patchy or massive necrosis (tissue death). Given time, the kidney tissue may regenerate, and it is on this hope that the treatment of acute renal failure is based.

The form of acute renal failure that is due to a poor supply of blood (ischemia) has many causes, the most common and most important being multiple injuries, septicemia (infections invading the bloodstream), abortion with abnormal or excessive bleeding from the female genital tract, internal or external hemorrhage, loss of fluid from the body as in severe diarrhea or burns, transfusion reactions, and severe heart attacks; a special case is the transplanted kidney, which commonly goes through a phase of acute renal failure that is independent of possible rejection.

The second common mechanism of acute renal failure is toxic. Many poisons are excreted by the kidney, and in the process, like other urinary constituents, they become concentrated and thus reach levels in the tubular fluid that damage the lining cells of the tubules. Though the tubular cells die and are shed in the urine, regeneration can take place and the patient survive, if he can be maintained during the period of depressed renal function and is not killed by other effects of the poison.

Types and causes of kidney disease

1) Chronic kidney disease: The most common form of kidney disease is chronic kidney disease. Chronic kidney disease is a long-term condition that doesn't improve over time. It's commonly caused by high blood pressure. High blood pressure is dangerous for the kidneys because it can increase the pressure on the glomeruli. Glomeruli are the tiny blood vessels in the kidneys where blood is cleaned. Over time, the increased pressure damages these vessels and kidney function begins to decline. Kidney function will eventually deteriorate to the point where the kidneys can no longer perform their job properly. In this case, a person would need to go on dialysis. Dialysis filters extra fluid and waste out of the blood. Dialysis can help treat kidney disease but it can't cure it. A kidney transplant may be another treatment option depending on your circumstances.

Diabetes is also a major cause of chronic kidney disease. Diabetes is a group of diseases that causes high blood sugar. The increased level of sugar in the blood damages the blood vessels in the kidneys over time. This means the kidneys can't clean the blood properly. Kidney failure can occur when your body becomes overloaded with toxins.

2) Kidney stones: Kidney stones are a common kidney problem. They occur when minerals and other substances in the blood crystallize in the kidneys, forming solid masses (stones). Kidney stones usually come out of the body during urination. Passing kidney stones can be extremely painful, but they rarely cause significant problems.

3) Glomerulonephritis: Glomerulonephritis is an inflammation of the glomeruli. Glomeruli are extremely small structures inside the kidneys that filter the blood. Glomerulonephritis can be caused by infections, drugs, or congenital abnormalities (disorders that occur during or shortly after birth). It often gets better on its own.

4) Polycystic kidney disease: Polycystic kidney disease is a genetic disorder that causes numerous cysts (small sacs of fluid) to grow in the kidneys. These cysts can interfere with kidney function and cause kidney failure. It's important to note that individual kidney cysts are fairly common and almost always harmless. Polycystic kidney disease is a separate, more serious condition.

5) Urinary tract infections: Urinary tract infections (UTIs) are bacterial infections of any part of

the urinary system. Infections in the bladder and urethra are the most common. They are easily treatable and rarely lead to more health problems. However, if left untreated, these infections can spread to the kidneys and cause kidney failure.

Symptoms of kidney disease

Kidney disease is a condition that can easily go unnoticed until the symptoms become severe. The following symptoms are early warning signs of kidney disease:

- Fatigue
- Difficulty concentrating
- Trouble sleeping
- Poor appetite
- Muscle cramping
- Swollen feet/ankles
- Puffiness around the eyes in the morning
- Dry, scaly skin
- Frequent urination, especially late at night.

Diagnosing Renal Diseases

To diagnose a patient for renal diseases, the doctor will first determine whether the patient belongs in any of the high-risk groups. Then some tests will be run to see if the kidneys are functioning properly. These tests may include:

- 1) Glomerular filtration rate (GFR)
- 2) Ultrasound or computed tomography (CT) Scan
- 3) Kidney biopsy
- 4) Urine test
- 5) Blood creatinine test

Treatment

- 1) Drugs and medication
- 2) Dietary and lifestyle changes

3) Dialysis

4) Hemodialysis

5) Peritoneal dialysis